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ABSTRACT

A project at the University of Michigan is described that involved the award of a small number of faculty fellowships that allowed some released time and financial support for development and implementation of classroom innovations. The focus of the Fellowship was the analysis and redesign of target courses regularly taught by the fellows. Technical assistance, equipment, training workshops, seminars, and personal consultation with project staff were provided. The project was based on the conceptual model of Rogers and Shoemaker that views the adoption of an innovation as an individual decision made within and influenced by a social context. The project was designed to increase the quality of instruction as measured by student performance and attitudes toward courses. A few controlled experiments were conducted to test the impact of video tapes on students' comprehension, and student ratings of faculty performance were obtained. The project was also designed to increase the faculty's use of instructional technology. Twenty-three innovations were adopted by the nine faculty fellows; the changes ranged from the use of video to the use of discussion and diagnostic tests. It was hoped that the use of instructional technology by non-participating faculty would increase through the influence of participating faculty. Although the fellows did act as dissemination agents through discussion with colleagues, few adoptions of innovations could be traced to work of the fellows. Appendices included a description of project activities for a social psychology course and a checklist of instructional techniques. (SW)

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Center for Research on
Learning and Teaching

The University of Michigan

An Effort at Instructional and Faculty Development at The University of Michigan

Robert B. Kozma
Center for Research on Learning and Teaching
The University of Michigan

a

Final Report

to the

Fund for Improvement of Postsecondary Education

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Chapter 1

Instructional Technology in Higher Education

For several decades the technology has existed to aid in the improvement of instruction. Audio-visual technologies such as television, film, and radio which have been perfected as forms of mass media are being applied in numerous educational settings. The information storage, retrieval, and processing capabilities of the computer allow for increased complexity and sensitivity of the instructional presentation. Interpersonal techniques such as role playing and simulation-gaming offer the potential for new dimensions in instruction. Entire instructional systems such as Postelthwait's Audio-Tutorial System and Keller's Personalized System of Instruction have been designed to integrate various modes of instruction with sound pedagogical principles. The development of instructional technologies led Sir Eric Ashby (1969) to herald the advent of a fourth revolution in education.

Yet despite these advances in instructional methodology, institutions of higher education -- the places where many of these technologies were first developed -- make relatively little use of these innovations. Large scale adoption of instructional technology has been relagated for the most part to primary and secondary educational institutions. As Kenneth Eble (1972) observed in his study of seventy colleges, classroom teaching is still largely a matter of a single professor talking to fairly large numbers of students. Even though innovative practices are found on almost every campus, the dominant mode of instruction remains the lecture.

The University of Michigan is like most institutions of higher education with regard to the delivery of instruction. In a 1974 survey of faculty (N=438) 97% reported using text books or other readings, 95% used lecture, and 78% used discussion in their classes. On the other hand only 19% used computer assisted instruction, 14% used instructional games and 6% used the Personalized System of Instruction at least once during the year prior to the survey.

The lack of impact of instructional technology on higher education has prompted the creation of many national commissions, committees and their resulting reports. The Commission on Instructional Technology (1970) identified six reasons for the limited success of instructional technology:

1. Indifference or antipathy toward using technology in education. The feeling of many administrators and professors is that technological applications would result in the dehumanization and depersonalization of education.
2. Poor programs. Many educators believe that television lessons, films, programmed texts, and instructional computer programs are typically dull, uninspired, unprofessional and generally of poor quality.
3. Inadequate equipment. Machinery required to accomodate some of the "instructional software" is frequently unavailable, incompatible, obsolete, or in disrepair.
4. Inaccessibility. Equipment and software are often stored in central distribution areas, and require elaborate check-out and reservation procedures.

5. Teachers not trained in instructional technology. Educators seldom have the technical skills needed to operate equipment or, more importantly, develop self-made materials appropriate to their own needs.

6. Media specialists excluded from central planning. Media experts or instructional consultants are rarely included in curriculum planning or course development.

The Carnegie Commission report (1972) generally concurs and adds:

7. The lack of reward for materials development. Faculty members interested in developing technology software are rarely rewarded to the extent that they would be if they developed traditional textual material or research publications.

Armsey and Dahl (1973) of the Ford Foundation add:

8. The fear of impact on roles and responsibilities. Teachers feel their traditional role will change to that of diagnostician, program developer, and instructional manager -- roles for which they are not trained and which may result in loss of prestige and rewards.

9. Ineptitute and insensitivity of media people. Technicians and producers often fail to accomodate their knowledge to specific needs of a classroom instructor.

Locally, a report by the University of Michigan President's Ad Hoc Communications Review Committee (1973) identifies:

10. The lack of funds. Tight budgets often preclude money for materials and services required by instructional improvement.

11. The lack of time. With a plethora of responsibilities, interested faculty rarely have the inordinate amount of time required to develop instructional innovations.
12. The lack of coordinated facilities. Frequently each of the technologies is assigned to a specialized department or center. Quite often these centers are not coordinated and a faculty member must wander from one to the other until he finds the technology appropriate to his problem. Or worse, the first center approached might ignore competing resources which may be more appropriate, resulting an unsuitable adoption and wasted money.

The list of obstacles to innovation seems overwhelming. Yet a case could be made that many of these barriers have been effectively removed with only limited success in the resulting adoption of innovation. It can be argued, however, that it is precisely because the barriers have been approached as disjunct, isolated, and independent causes that the solutions have failed. By attacking such a problem in a systematic way the chances for solution increase.

In 1974 the Fund for Improvement of Postsecondary Education (FIPSE) awarded the Center for Research on Learning and Teaching (CRLT) a two year grant for the purpose of increasing the use of instructional technology at the University of Michigan. Specifically, the objectives of the project were:

1. To improve the quality of instruction as measured by performance in, and attitude toward, participating courses.
2. To increase the use of instructional technology by faculty participating in the project.

3. To increase the use of instructional technology by non-participating faculty which could be traced to faculty participating in the project.
4. To increase the recognition of teaching as a rewardable activity among participating departments.

During the past fifteen years the staff of CRLT has been working to improve the classroom as a learning environment at the University of Michigan. The Center has provided individual teachers and departments with assistance in the clarification of instructional problems and the selection of procedures and resources appropriate to their needs. The FIPSE grant, referred to locally as the Faculty Fellowship Project, allowed the Center to implement and examine a particular approach to the adoption of instructional innovations.

The Project was anchored in the conceptual model of Rogers and Shoemaker (1971). These authors view the adoption of an innovation as an individual decision made within and influenced by a social context. Characteristics of the adopter, the innovation, and the social system are all germane to the adoption process. Rogers and Shoemaker cited a series of propositions which related these elements to each other. Adoption of innovations, for example, is influenced by characteristics of the innovation and the potential adopter. Diffusion of innovations through a system is influenced by characteristics of the system and the relative characteristics of its members. A number of these propositions were applied to college faculty considering the adoption of instructional innovations at the University of Michigan.

Briefly described the Project involved the selection of a small number of faculty who were awarded Fellowships consisting of some released time and financial support for development and implementation of classroom innovations. In addition, the fellows had access to technical assistance, equipment, training workshops, a series of seminars, and personalized consultation with project staff. The focus of the Fellowship was the analysis and redesign of target courses regularly taught by the fellows. The selection of fellows, as well as that of the activities and resources of the Fellowship was intended to facilitate the adoption of instructional technologies and their diffusion to other faculty members.

During the two years of the Faculty Fellowship Project ten fellows were selected from ten different departments representing four different colleges within the University. The ten fellows and their target course are listed in Table 1.

The ten fellows each engaged in a variety of activities during their fellowships which were designed to improve the instruction in their courses. The chapters that follow examine the Fellowship with respect to the objectives of the project.

Table 1

List of Faculty Fellows

1974-75 Fellows

Dr. A., an Assistant Professor of Speech and Theater who taught a directing course to undergraduate theater majors.

Dr. B. was a Professor of Geology who taught a course for Geology majors and a freshman seminar in the Residential College.

Dr. C. was an Assistant Professor of English. During the fellowship Dr. C. designed a writer's workshop for students who had difficulty writing.

Dr. D. was an Associate Professor of Physics who taught a large introductory Physics course.

Dr. E. was a Lecturer in the department of Civil Engineering and taught a course on structures to undergraduate students.

Dr. F. was an Assistant Professor of Sociology and coordinated an undergraduate course in research design. He also was designing a course to be offered on theory building.

1975-76 Fellows

Dr. G. was a Professor of Public Health and taught a graduate level course on values and ethics.

Dr. H. was a Professor of Education and taught a block program (a combination of four courses) in Science Education.

Dr. I. was a Professor of Mechanical Engineering and taught a laboratory course for undergraduate majors.

Dr. J. was an Associate Professor of Psychology and taught the Introductory Social Psychology course for undergraduates.

*Department names and other details have been changed to protect the anonimity of the fellows.

Chapter 2

Instructional Technology and Student Learning

Objective 1
The proposed project will result in an increase in the quality of instruction as measured by student performance in, and attitude toward participating courses.

The improvement of instruction must be evaluated by examining its impact on students. One can not merely assume that an improvement in learning will result from the employment of the latest technology. On the contrary, a series of recent reviews (Jamison, Suppes and Wells, 1975; McKeachie, 1974; and Gage and Berliner, 1976) have documented the failure of psychologists and educational researchers to come up with any consistantly effective instructional techniques. Upon examining scores of studies which compare a variety of techniques (including lecture, discussion, instructional video, programmed instruction and computer assisted instruction) and a variety of strategies (including feedback, reinforcement, and questioning) the consensus of the reviewers can be represented by Gage and Berliner: "We should expect any teaching method to be about as 'good' as any other when the criterion is student achievement or knowledge or understanding, and the content coverage of the methods is similar (1976, p. 15)."

However, at issue is not merely the use of instructional technology, but its <u>appropriate</u> use. As any student subjected to hours of "talking face"

video, or computer assisted drills would attest there is no special magic to media. The appropriate use of instructional technology requires the careful matching of the medium to the characteristics of the students, the subject matter content, the classroom environment and the teacher (Kozma, 1977).

Typically, faculty members have little information about their classroom situation. Handed a list of names and assigned a room, they are expected to provide a quality education for all of their students. Few have the time or the means to assess the entering skills of the pupils, their preference for certain modes of instruction, or their need for special assistance. Although most are experts in their discipline and have the knowledge of their subject matter that is essential for good instruction, they may be unaware of the psychological structure of their course content, as it corresponds to the way students learn. With regard to their role as teacher many college faculty members have been unreflective about their own values and style of teaching. In addition, they rarely receive training in the use of instructional technology and therefore may be unfamiliar with some of the features of a medium which predispose it to certain uses.

Filling some of these gaps is no small chore. Although a variety of diagnostic techniques have been developed, they remain, for the most part, narrow in focus and uncoordinated in application. Providing the faculty fellows with critical information about their class in a summarized form was one of the means intended to accomplish the first objective of the project. It was hoped that a more complete knowledge of classroom variables would lead to more informed instructional decisions, more appropriate media uses, and, therefore, improved learning.

During the first year of the project information was collected informally

and summarized for the fellows in an impressionistic manner. Project staff met regularly with individual fellows and discussed their goals for their course, their attitudes as teachers, and their plans to improve their instruction. Staff members also sat in on class meetings and talked with students and discussed their observations and recommendations with the fellows. All of the fellows indicated in their end-of-fellowship evaluation that these consultations were useful in accomplishing their goals in the fellowship. Table 2 briefly describes the instructional situation of each of the 1974-75 fellows and the strategies chosen to handle the problem.

As the project progressed the staff had time to assemble and review various instruments for diagnosing and assessing instructional situations. Instruments were chosen to obtain information on each of these elements of the instructional situation: the instructor, the content, the student, and the environment. Table 3 lists, describes, and evaluates the sources of information used by the project staff. These instruments were used to obtain information from the fellows in pre-term interviews, and from the students through early term, mid-term and end-of-term data collection sessions.

As the data collection became more systematic so did the data reporting. The information summarized in individual planning sessions and case study reports (see Appendix A for an example), tended to be more comprehensive, and suggestive of change. Consequently the second year fellows rated the consultations with project staff even more highly then did the first year fellows.

The resulting projects of the second year fellows tended to be broader in scope than those of the 1974-75 fellows. They tended to involve the reconsideration of the entire course whereas the projects during the first

Table 2

Instructional Situations and Strategies for the

1974-75 Faculty Fellows

Dr. A.

Course: Principles of Theater Directing

Situation: Abstract concepts and principles of theater directing need to be illustrated through enacted scenes from various plays.

Strategies: A series of half-inch black and white vignettes were produced to illustrate concepts and principles.

Course: Fundamentals of Acting

Situation: Acting students are not able to "see" their own acting and thus find it difficult to analyze and correct.

Strategies: Use video to record enacted scenes and playback with critique.

Dr. B.

Course: Residential College Freshman Seminar, topic: Environment and Society

Situation: Course has the affective goal of teaching students to value the natural environment.

Strategies: Students design role plays and simulations which demonstrate the impact of the environment on society.

Course: Junior Seminar for Geology Concentrators

Situation: Course goal is to teach students to apply basic geographical concepts to geographical situations.

Strategies: Illustrate the application of geological concepts to the problems of a certain geographical region by use of case studies with graphic support (slides and charts).

Dr. C.

Course: Writer's Workshop

Situation: Many college students can't and/or don't want to write well. The problem is both affective and cognitive.

Table 2 (continued)

Dr. C. - (continued

Strategies: The use of diagnostic tests to determine students' problems, the use of self-instructional modules to teach writing mechanics; and the use of simulations, role plays and group discussions to build confidence and a desire to write.

Dr. D.

Course: General Physics

Situation: A number of concepts, both concrete and abstract, are covered in the lecture. These are difficult to illustrate either because they are abstract or because it is difficult for all of the 300 students in the lecture hall to see models in the front of the room.

Strategies: Two brief single concept video tapes were made to be used during lecture. One was an animated illustration of an abstract concept, the other was a series of close-ups on examples illustrating a concrete concept.

Dr. E.

Course: Introduction to Strengthening Mechanisms. Course required of all Civil Engineering undergraduates.

Situation: A number of laboratory demonstrations are used in the course to illustrate certain principles. There were 130 students per year in the course and twenty or so in each section. It is hard for the students to get close to the apparatus and the detail is important. In addition the experiment must be repeated many times, it is hard to set up, and somewhat unreliable.

Strategies: Two video tapes of demonstrations were made as pilots for a series. The tapes used close-ups and super impossion of instrument readings over the demonstration to allow students to see the details.

Dr. F.

Course: To be offered: Design of Theoretical Models

Situation: A course to be offered which allows students and faculty to design theoretical models, requires personalized interaction with each student as model is being designed.

Table 2 (continued)

Dr. F. (continued

Strategies: The development of a computer program and corresponding documentation which would allow the student to interact with computer to design the model.

Table 3

Diagnostic Instruments Used During the

Second Year of the Fellowship Project

Faculty Interview

Source: CRLT staff

Description: A structured conversation between faculty member and project staff. A interview schedule of 15 questions serves as an outline for the discussion. Questions concern the values, attitudes, experiences, and activities of the faculty member as a teacher.

Theoretical base and/or assumptions: Interview schedule was based on the work of Nevitt Sanford (1971).

Validation: No data available at this time.

Administration: Conversation takes between one and two hours. Difficult to summarize data into useful form.

Uses: Faculty member can use discussion to clarify own thoughts about teaching. Can build rapport between faculty member and project staff. Gives project staff some impressions of faculty member's attitudes toward teaching which can be used to shape future instructional recommendations.

Teacher Typology

Source: CRLT staff

Description: Seven paragraphs which describe seven teacher types defined in terms of educational goals, values, roles and activities of the teacher. Paragraphs are ranked by students and/or teacher according to actual or preferred teacher style. Types include: Teacher as expert, as formal authority, as socializing agent, as facilitator, as ego ideal, as trainer of minds, and as person.

Theoretical base and/or assumptions: Typology based on the work of Mann, et al. (1970) and Axelrod (1973).

Validation: No data available at this time.

Administration: Easy to administer, and hand score. 5-7 minutes.

Uses: Can be used with student and/or teacher at the beginning of the term to assess preferred style. Can be used at mid or the end of the term to examine dissonance between teacher self-perception and student perception of teacher.

Biographical Information

Description: Information usually included on a faculty member's vita include: age, sex, rank, tenure status, education, teaching experience, administrative experience, publications and research specializations.

Uses: Indicates faculty member's status and prestige in the department. Can be used to indicate the amount of influence and opinion leadership the

Table 3 (continued)

Biographical Information (continued)

faculty member has, and the extent to which he/she can act as a change agent and internal resource person to his/her colleagues.

Taxonomy of Learning Objectives

Source: Bloom (1956), Krathwhol, et al. (1964), Gagne (1970)

Description: Several alternative classification systems use to define the objectives of a course. The Bloom-Krathwhol system lists six types of cognitive objectives and six affective types. The Gagne taxonomy lists eight types of learning, four of which are likely to be encountered at the college level. The project staff used a simplified cognitive system based on the work of the above authors: information learning, concept learning and application learning.

Theoretical base and/or assumptions: System assumes all educational outcomes regardless of discipline can be classified using the same system.

Administration: Requires extensive interaction between project staff and faculty person serving as content expert. Requires that faculty person share the above assumption.

Uses: Used to specify, define, and interrelate intended course outcomes. Classification has implications for selection of instructional strategies.

Admissions Data and Transcript

Description: Information usually included in a student's records are high school and college achievement (GPA), preparation (specific courses taken), and ability (SAT scores). Usually requires a release from the students and the cooperation of the registrar.

Uses: Student's profile gives a general picture of the student's preparation for the course being taken. Class profile gives an indication of the amount of variability within the class. This information can be used to determine the starting point for course material, the pacing, and the need for supplimentary material.

Grasha-Riechmann Student Learning Styles Questionnaire

Source: Institute for Research and Training in Higher Education, University of Cincinnati

Description: Paper and pencil questionnaire consisting of two parallel forms (general, and specific class form) of ninety questions. Six learning styles are measured, including: independent, avoidant, collaborative, dependent, competitive, and participant.

Theoretical base and/or assumptions:

Table 3 (continued)

Grasha-Riechmann Student Learning Styles Questionnaire (continued

Validation: Data available from source.

Administration: Easy to administer, cumbersome to hand score. Takes 20-30 minutes.

Uses: General form can be used at the beginning of the term to plan instruction around students' preferences for structure and interpersonal approaches. Specific class form can be used during the term for formative evaluation.

Personality Research Form

Source: Douglas N. Jackson

Description: A paper and pencil personality test which comes in two parallel forms in each of two lengths (long: 440 items, 22 scales, forms AA and BB; short: 300 items, 15 scales, forms A and B). Scales used for project: Achievement, Affiliation, Autonomy, Cognitive Structure, Dominance, Endurance, Change and Understanding.

Theoretical base and/or assumptions: Scales developed from work of Henry Murry (1938).

Validation: Validation data and norms available from publisher.

Administration: Easy to administer, and hand score using templates. Short form: 30-45 minutes; long form: 40-70 minutes.

Uses: Used to assess personality of students and/or teacher. Class or individual profiles can be used to make decisions about instructional methods which are compatible with personality characteristics. Such decisions would include the amount of structure provided in the class and extent to which interpersonal methods are used.

Educational Experiences and Preferences

Source: C. Robert Pace. Los Angeles: Laboratory for Research on Higher Education, UCLA, 1975.

Description: A 16 item questionnaire asking students to indicate their experience with and preference for certain course activities. Basically one scale ranging explicit, highly structured activities to autonomous, open ended activities.

Validation:

Administration: Easy to administer and hand score. Takes 5-10 minutes to complete.

Uses: Used at the beginning of the term to plan for activities which correspond to those covered by the questionnaire.

Table 3 (continued)

Report of Course Activities and Attitudes

Source: C. Robert Pace. Los Angeles: Laboratory for Research on Higher Education, UCLA. 1975

Description: A 25 item questionnaire which asks students to report on their course activities and attitudes. Three scales are measured: intellectual engagement (simple to complex learning), attitudinal involvement (disinterest to interest), course activity (passive to active).

Theoretical base and/or assumptions: Based on taxonomical work of Bloom (1956) and Krathwhol, et al. (1964)

Validation:

Administration: Easy to administer and hand score. 8-12 minutes.

Uses: Used in mid-term to assess the extent to which students are actively and enthusiastically involved in learning of complex content.

Purdue Cafeteria Evaluation System

Source: Office of Instructional Services, Purdue University.

Description: A flexible computer-based, diagnostic system of student ratings. The system consists of a catalog of 200 items and a core of five items. The instructor can tailor his/her own instrument by selecting up to 35 items, in addition to the core, from the catalog.

Theoretical base and/or assumptions: Items in the catalog were selected from empirically tested items.

Validation: Data available from source. Institution or subgroup norms generated by computer.

Administration: After instructor selects items, computer generates forms, scores items and computes norms and percentiles. Because computer based, available only on a institutional basis. Time varies with length of form.

Uses: Can be used in mid-term for formative evaluation of instructors strategies and assumptions. Can be used for end of term evaluation.

Taxonomy of Educational Environments

Source: CRLT staff

Description: Six paragraphs describing six different educational environments to be ranked by students according to actual or preferred type. The six categories are: Teacher-oriented automated, interaction-oriented, student oriented, sheltered experience oriented, experience oriented.

Theoretical base and/or assumptions: Based on a list of environments proposed by Berquist and Phillips (1975).

Validation: No validation data available at this time.

Administration: Easy to administer and score. Takes 3-8 minutes.

Uses: Used at the beginning of the term to plan the classroom environment; used as mid-term to assess it.

year, with a couple exceptions, tended to deal with one or two units within the course. The situations and strategies for the 1975-76 fellows are presented in Table 4. The more systematic approach of Dr. I, for example, which included the use of a series of video tapes, some computer simulations, and an instructional game, can be contrasted to the production of two video tapes in a somewhat similar course taught by Dr. E. These differences are due in part to the in-depth analysis of the target courses by the second year fellows and project staff facilitated by the collection of detailed classroom data.

Evaluation

As many educational researchers will attest evaluation of instruction in natural settings is a difficult task. Teaching has to take priority over evaluation, and the constraints of time, place, and operation frequently conflict with such evaluational necessities as random assignment and controlled environment. As a result the educational evaluator frequently must settle for the second or third best evaluation design. Rather than testing the innovation implemented in its entirety he or she must test a small number of units or over a brief period of time. Rather than establish a causal relationship between treatment and results he or she must build a case on circumstancial evidence.

Such was the situation with the evaluation of the Faculty Fellowship Project. Demonstrating that a program which focused on faculty inturn had an immediate impact on students was difficult and maybe even presumptuous given the time frame of the project. Support for this contention hinged on a few controlled experiments and the use of student ratings in target courses.

Three experiments with video. It was feasible to arrange for only

Table 4

Instructional Situations and Strategies for the

1975-76 Faculty Fellows

Dr. G.

Course: Values and Ethics in Public Health Practice.

Situation: Course goals are for students to identify ethical issues and positions in public health practice, clarify their positions, and be able to resolve ethical issues in social work practice. The graduate class of six students tends to moderately prefer collaborative and participatory learning styles and activities such as discussion and written reports. Teacher sees herself as a trainer of minds.

Strategies: Issues will be presented in lecture, and positions on these issues will be discussed in class. Role-play simulations will be used to give practice in resolving ethical problems.

Dr. H.

Course: Science Education Block Program. 13 credit hours made of four courses: Science Education Methods, Science Education Curriculum, Educational Psychology, and Educational Field Work.

Situation: Comprehensive course with these major goals: 1) describe and apply various theoretical models of teaching, 2) appropriately use various instructional methodologies, 3) develop group process skills needed to be a good teacher. The students are high in achievement and endurance, and prefer collaborative, participant and independent learning styles. The teacher is high in achievement, affiliation, understanding and change and prefers to be a facilitator and a promoter of personal growth.

Strategies: Independent study was used to learn models. Applications of the models were presented in small groups and discussed. Various other techniques (games, programmed instruction, etc.) were used to teach these techniques. Group process skills were integrated into the conduct of the course.

Dr. I.

Course: Experimentation as a Method of Problem Solving. A Mechanical Engineering laboratory course.

Table 4 (continued)

Dr. I (continued)

Situation: The emphasis in this course is changing from the demonstration of principles to the application of principles to open-ended problems, while retaining the previous goals. Students have a strong vocational interest, are high in achievement and endurance and Math SAT; while showing a preference for collaborative and participant learning styles. The teacher views himself as a trainer of minds and scores high in dominance and endurance. Class is held in a poorly equipped laboratory.

Strategies: Use a series of video tapes to replace time consuming demonstration experiments. Use computer simulations to improve specific problem solving skills, and an instructional game to improve general problem solving logic.

Dr. J.

Course: Introduction to Social Psychology

Situation: The general goals of the course were to enable students to identify social psychological issues in everyday life, and to state, compare and apply theories to explain these phenomina. The students prefer participatory and collaborative learning styles. The teacher is concerned both with content and with student intellectual and personal development, but is unsure of his skills as a teacher especially with regard to discussion techniques.

Strategies: The theories are presented through the readings and lectures. Films and video tapes are used to present social psycological issues, and serve as a focus for discussions. Simulation games are used to apply theories to situations.

three controlled instructional experiments during the fellowship. The only projects which lent themselves to rigorous testing were those innovations which were discrete, brief and had rather specific objectives. In all three cases these were video projects. It was much easier to test the impact of a video tape on the students' comprehension of a concept than it would have been to test Dr. H's use of various interpersonal techniques to improve the group process skills of her students. Consequently the controlled experiments seem to deal with the relatively simple objectives, and the broader goals are left to be tested by the less rigorous, and therefore less reliable designs.

Professor E. tested both video tapes he made to be used as adjunct presentations to his physics lectures. In one experiment, three sections of students were randomly assigned to three treatment groups. Group I saw the video tape on the abstract concept of waves and atomic structure, heard a lecture on the same topic, took a five item quiz, viewed the tape again, and took the quiz a second time. Group II heard the lecture only and took the quiz. Group III saw the tape only and took the quiz. This design allowed the comparisons shown in Table 5. As indicated the tape and the lecture together were better than the lecture alone, which was the way the material had been taught previously.

The second tape was tested in an experiment of much simpler design. Students were assigned to two groups, one viewing a video tape and the other group receiving no treatment and serving as a control. As Table 6 indicates the group viewing the video tape out-performed the control group on a three item quiz.

Table 5

Effectiveness of a Physics Video Tape on Waves

Group I: Saw tape, heard lecture, took test, saw tape, took test.
Group II: Heard lecture, took test.
Group III: Saw tape, took test.

Comparisons	N	$\bar{X}$	DF	t	p
tape only	19	2.84	39	.46	N.S.
lecture only	22	2.66			
tape and lecture	15	3.46	35	2.03	.025
lecture only	22	2.66			
tape and lecture	15	3.46	32	1.37	.10
tape only	19	2.84			
tape and lecture	15	3.46	28	.95	N.S.
repeat	15	3.87			

Table 6

Effectiveness of a Second Physics Video Tape

	N	$\bar{X}$	DF	t	p
viewed tape	27	1.44	48	3.37	.005
did not view tape	23	.79			

Dr. E. developed two video tapes to be used to illustrate certain principles in his civil engineering laboratory course. One of the video tapes was chosen for a controlled experiment to test its effectiveness. Students were randomly assigned to two groups. One group viewed the tape, took a ten-point quiz, viewed a parallel live demonstration and finally took the quiz again. The second group began by taking a quiz, then viewed the live demonstration, took the quiz a second time, viewed the tape, and took the quiz a third time. This arrangement allowed the three comparisons shown in Table 7. As indicated students viewing the video tape performed better than those viewing a live demonstration. When both groups were exposed to both treatments they performed about equally as well.

Dr. A. developed a series of video tapes illustrating the principles of directing. A tape on delivering notes, or rehersal critiques, to actors was selected for evaluation. Sixteen students were randomly divided into two groups. One group viewed the tape the second group listened to a lecture, which was the way this topic was handled in previous courses. After receiving instruction students from both groups were exposed to a test situation, individually and in random order. The test involved the viewing of a video taped rehersal and the delivery of the critique by the student to the two actors who were in the tape. The two actors were actually graduate students unaware of whether the student-director was exposed to the taped instruction or the lecture. After the critique they independently rated the students on three scales of four, six, and two items respectively. The results shown in Table 8 indicate that the students who viewed the video tape consistently performed better than those who heard the lecture.

Table 7

Effectiveness of Video Tape in Civil Engineering

Group I: Viewed tape, took test, viewed demonstration, took test.
Group II: Took test, viewed demonstration, took test.

Comparisons	N	$\bar{X}$	DF	t	p
tape	8	7.62	15	5.71	.005
no tape	9	2.56			
tape	8	7.62	15	2.21	.025
demonstration	9	5.33			
tape-demonstration	7	8.05	14	1.22	N.S.
demonstration-tape	9	6.78			

Table 8

Effectiveness of a Video Tape in a Directing Class

	N	$\bar{X}$	DF	t	p
rating scale 1					
tape	8	35.0	14	1.47	.10
demonstration	8	32.0			
rating scale 2					
tape	8	53.4	14	1.66	.10
demonstration	8	48.2			
rating scale 3					
tape	8	17.1	14	1.09	N.S.
demonstration	8	15.9			

Student ratings. Student ratings of a faculty member's instruction are much easier to obtain than results from controlled experiments. End of term ratings were obtained for five of the 1974-75 faculty fellow's target courses. Dr. F. had not completed the design of his new course. Ratings were also obtained for three of the 1975-76 fellows. Dr. G. used a different set of ratings required by her department.

Table 9 lists the median and the percentile for a number of items from the Purdue Cafeteria System. The first five items are core questions asked of all faculty members who use the cafeteria system. The next were items selected because they matched the particular projects of the fellows.

Since it was not possible to obtain ratings of the same courses from previous years, percentiles were used as a measure of the success of the fellows relative to other teachers using the system. Using these to attribute effects to the fellowship must be done with great caution for these ratings could have been as high or even higher had they been taken prior to the fellows' involvement in the project.

What is of interest is how the fellows faired on the special items when compared to their ratings on core items. As a group, the fellows had relatively low ratings on the core questions, very few being above the fiftieth percentile. The ratings on special items, those reflecting the objectives of their projects, were very high. This could indicate that the fellows were relatively successful in their goals, and that students were affected by their efforts. The core items, which tend to be more comprehensive, may be less sensitive, or at least less immediately so. This pattern is maintained in the mean ratings of the 1975-76 fellows, for whom percentile scores were unavailable.

Table 9

Student Ratings for Faculty Fellows

A. 1974-75 Faculty Fellows	Dr. A		Dr. B		Dr. C		Dr. D		Dr. E	
	Median	%tile	Median	%tile	Median	*	Median	%tile	Median	%tile
Core Questions										
My instructor motivates me to do my best work	2.1	62	2.9	16	1.7		2.9	16	2.9	16
My instructor explains difficult material clearly	2.5	17	2.2	31	2.2		2.1	46	2.1	46
Course assignments are interesting and stimulating	2.0	70	2.2	50	2.0		3.3	4	2.9	19
Overall, this course is among the best I have ever taken	1.9	85	3.6	17	1.8		3.4	20	2.4	56
Overall, this instructor is among the best teachers I have known	1.9	59	2.7	23	1.8		1.7	67	1.9	59
Special Items										
My instructor makes good use of examples and illustrations	1.8	67	2.0	47			1.8	67	1.7	83
This course builds understanding of concepts and principles	2.1	52	2.1	52			2.1	52	1.6	96
Median are an asset to this course	1.1	99					1.9	58		
My instructor encourages student creativity					1.3					
My instructor suggests ways I can improve					1.2					
Exams are used to help me find my strengths and weaknesses					2.8					
My technical skills are improved as a result of this course					1.4					
This course provides an opportunity to learn from other students					1.3					

B. 1975-76 Faculty Fellows*	Dr. H	Dr. I	Dr. J
	Mean	Mean	Mean
Core Questions			
My instructor motivates me to do my best work	2.3	2.8	2.9
My instructor explains difficult material clearly	2.2	2.4	2.4
Course assignments are interesting & stimulating	2.6	3.3	2.2
Overall this course is among the best I have ever taken	1.9	3.4	3.1
Overall this instructor is among the best teachers I have known	1.8	2.0	2.9
Special Items			
Mutual respect is a concept practiced in this course	1.7		
I was able to set and achieve some of my own goals	1.4		
My instructor develops classroom discussion skillfully	1.8		3.2

Table 9 (continued)

B. 1975-76 Faculty Fellows* (continued)	Dr. H Mean	Dr. I Mean	Dr. J Mean
Special Items (continued)			
I find the course emphasis on individual projects stimulating	2.1		
This course builds understanding of concepts and principles		2.4	2.1
The instructor encourages divergent thinking		2.3	
Films in this course contribute significantly to my learning			1.6
The games and simulations in this course contribute significantly to my learning			1.5
A teacher/student partnership in learning is encouraged			2.8

*Percentiles not available.

Conclusions and Recommendations

It appears there is some reason to believe that the faculty fellowship project did have some impact on student learning and attitudes in the target courses. In several instances controlled experiments showed that students learned more as a result of changes in the target courses. In many cases favorable ratings support the contention that instruction in the course may have improved in rather specific ways as a result of the fellows' projects.

Based on these rather tenuous but positive results several recommendations can be made.

1. Media should be matched to the characteristics of the instructional situation. Attributes of the course content, the students, the teacher, and the classroom environment should all be considered when making instructional decisions.
2. A comprehensive collection of information on a course aids in decision making. Data from such sources as discussions with instructors and students, classroom observations, questionnaires, and records should be thoughtfully summarized and presented to the instructor in case study form. Subsequent consultation on the implications for instruction should take place between the instructor and an instructional developer.
3. When student ratings are used to evaluate instructional changes, ratings of the specific changes should be collected in addition to the more general items. General items, much like student IQ, may measure the more enduring qualities of the teacher and may be less sensitive to change. Specific questions can be used to get a more reliable measure of student reaction to change.

Chapter 3

Adoption of Instructional Innovations

> The proposed project will increase the use of instructional technology by faculty participating in the project.

It was an assumption of this project that instructional technology, appropriately used, would lead to improved learning. The second principle objective of the project was to facilitate the adoption of instructional innovations. The project staff, serving as change agents, worked to increase the use of instructional technologies by the faculty fellows.

Rogers and Schoemaker (1971) describe the innovation-decision process as the individual mental process through which a person passes from first knowledge of an innovation to a decision to adopt or reject and to confirmation of this decision (p. 99). The process consists of four steps: knowledge, persuasion, decision and confirmation.

In order to adopt an innovation an individual first learns of it. The person becomes aware of the existence of the innovation, learns how it works, and maybe even learns the principles of why and when it works. Next the person forms some attitude toward it, either favorable or unfavorable. He/she acquires more knowledge of the innovation with regard to its relative advantage, compatability with current practices, and its complexity. The person then decides on whether to adopt it or reject it,

sometimes based on a trial use of the innovation. And finally, if adopted the person either confirms the decision or discontinues the innovation.

There are also certain antecendents to this process. Characteristics of the individual (such as his/her attitude toward change and his/her perceived need) and of the social system (such as tolerance of deviancy and support for change) tend to influence the decision process. The social system can also influence the outcome during the decision process. Mass media and the existence of change agents can facilitate knowledge of the innovation, influence attitudes and reinforce adoptions.

Several activities of the Faculty Fellowship were designed to influence the innovation-decision process. Handouts describing various technologies, and seminars demonstrating and discussing these innovations, were used to build awareness and form opinions of their use among fellows. Released time, technical assistance and funds for production were provided so that the fellows had the resources needed to implement innovations that they elected to adopt.

The handouts and seminars served to make the fellows aware of a variety of instructional techniques. In that regard, a number of characteristics have been shown to correlate with adoption (Rogers and Shoemaker, 1971). Some of these are inherent in the innovation and cannot be changed. Other characteristics can be modified to make the innovation more desirable to a new user. Relative advantages, complexity and communicability are three of the characteristics which affect the rate of adoption. The handouts distributed at the Faculty Fellow seminars addressed these concerns. Each handout communicated the essence of the innovation, the appropriate uses of the innovation, and its relative advantages and disadvantages. A section on implementation was designed to present the operation of the innovation in a clear, concise manner.

The seminars were a series of weekly meetings which covered a variety of topics from Examining the Instructional System to Role-Playing, PSI, and Grading. When asked at the end of the fellowship what function the seminars served, most of the fellows identified an awareness function. This is reflected by such comments as, "Gave me a lot of new ideas," and, "Introduced me to ideas and concepts with which I was not familiar." There were only a few cases where it seemed that the seminar had a more immediate impact on the adoption decision. Dr. I indicated that he used an instructional game in his class as a result of the seminar on gaming. Dr. F reported that, "The most useful function of the seminars was the dissemination of information about things I was already interested in," indicating that the seminars served an attitude formation function for him.

The released time provided by the fellowship was used to develop and implement the innovations selected by the fellows. When asked how they had used their released time, the fellows' responses ranged from "making video tapes, and selecting films and games" to "reading on course content and developing objectives" for their courses. Of the nine fellows who received released time, one rated it as "very useful," and seven said they couldn't have accomplished their projects without it.

Similarly rated was money for production, with two fellows saying that the funds were very useful and five saying they were indispensable. As for technical assistance (computer programmers, audio-visual technicians, etc.), only one fellow said he couldn't have operated without it, while six said it was useful or very useful.

Evaluation

The faculty fellows were interviewed upon entering the program. Among other things, they were asked about their use of sixteen different instructional technologies and methods. They were interviewed again at the end of their tenure as fellows. Table 10 indicates the number of techniques used by the fellows the year prior to their involvement in the project, the number used upon completion of their fellowship, the number of new uses, and a list of the newly adopted innovations. The fact that the number of new uses does not equal the difference between the pre- and the post-scores is due to several discontinuations that occurred.

In total twenty-three innovations were adopted by the nine faculty fellows who taught during their year in the project. These changes ranged from the use of video, to the use of discussion, and diagnostic tests. While four of the fellows adopted only one technique, two tried five innovations, and none of the fellows failed to make any changes in their instruction.

This increase in the use of instructional technology is quite dramatic when the faculty fellows are compared to other groups participating in the survey. These groups include faculty fellow applicants (those people who applied for but did not receive fellowships), Instructional Development Fund recipients (another CRLT program somewhat comparable in intent to the Faculty Fellowship), department chairmen, and a random sample of the general faculty. The means in Table 11 indicate the average number of the sixteen techniques list which were used by these groups. The "post" means were adjusted (using covariance) for some groups to account for the fact that the people who dropped from the sample tended to be light users of instructional technology. In comparison the faculty fellows increased their use of technology much more than any of the other groups.

Table 10

Instructional Innovations Used by the Faculty Fellows*

Fellow	Number of Innovations Used Prior to Fellowship	Number of Innovations Used After Fellowship	Number of New Adoptions	Innovations Adopted
Dr. A	8	10	2	modified Keller plan, diagnostic testing
Dr. B	5	10	5	video, overhead, graphics, simulations, films
Dr. C	9	11	3	video, overhead CAI
Dr. D	10	7	1	graphics
Dr. E	6	6	1	graphics
Dr. F	11	**	**	**
Dr. G	6	9	3	video, film, games
Dr. H	11	13	2	slides, simulations
Dr. I	8	12	5	video, film, audio, graphics, discussion
Dr. J	9	9	1	role play

*R's responded to a checklist of 16 instructional techniques (see Appendix 2).

**Did not teach during this period.

Table 11

Number of Instructional Innovations Used by Faculty*

Sample Group	$\bar{X}$ 1974	$\bar{X}$ 1976	p
General faculty**	6.70	6.63	N.S
Chairmen**	6.33	8.15	N.S.
IDF recipients**	8.11	8.51	N.S.
Fellowship applicants	8.83	7.90	N.S.
Fellows	6.44	10.57	.003

* R's responded to a checklist of 16 instructional techniques (see Appendix 2).

** Means adjusted using covariance to account for attrition in sample.

As with the previous objective, caution must be exercised in making claims of success. The fellowship seminars may have merely given the fellows technical names for methods which they, and other faculty, have used in the past. For example, this appears to have been the case with Dr. A. As a result of attending the seminar on PSI, he decided to use peer tutors in his acting course. He reported this as an adoption of PSI in his post-fellowship survey. Although the change was quite appropriate and commendable, referring to it as PSI stretches the meaning of the term intolerably. Other faculty members using similar arrangements were not afforded the opportunity to misuse the term, not having had the benefit of the PSI seminar.

It is unlikely, however, that this was a typical phenomena. Most of the sixteen techniques listed were not unusual, and probably familiar to most faculty. Common place terms such as video tape, discussions, and student ratings were more prevalent on the list than the more esoteric techniques of PSI and diagnostic testing. However, the number of innovations used by the faculty fellows may be slightly inflated because of the increased attention they paid to their teaching during the fellowship period.

Conclusions and Recommendations

There is substantial evidence to indicate that the faculty fellows did increase their use of instructional technology during the fellowship period. Video tapes were produced, discussion techniques were acquired, and simulation games were purchased. Courses were redesigned to include a variety of techniques as well as to reflect the fellows' analysis of their classroom situation. There is even some evidence to indicate that these increases

are greater than they would have been had the fellows been left to their own resources, or been involved in one of CRLT's other programs.

The success in promoting the use of instructional technology among the faculty fellows lends support to these recommendations:

1. Seminars can be effectively used to increase the awareness of and influence the attitude toward instructional innovations. Such seminars should present such information about the technique as, what it is, what its advantages and disadvantages are, what its appropriate uses are, and how it is used. The seminars should also have an experiencial component to them. A seminar on games should not be limited to merely talking about them -- one should be played.

2. Concrete support in terms of released time, funds for production, and technical assistance is probably essential for a significant increase in the use of technology. The lack of these resources is frequently cited as the reason why changes in instruction do not occur. Ready access to them makes the adoption of an innovation a feasible alternative to the way things have always been done. Instructional support takes the teacher from good intensions to implementation.

Chapter 4

Dissemination of Instructional Innovations

> The proposed project will increase the use of instructional technology by non-participating faculty which can be traced to faculty participating in the project.

Increasing the use of instructional technology by the faculty members who expressed interest and were supported by the Fellowship would in and of itself have a very slight impact on the overall instructional picture at the University of Michigan. The third principle objective of the Faculty Fellowship project was to support the dissemination of instructional innovations by the Faculty Fellows.

Rogers and Schoemaker (1971) describe a process whereby innovations are diffused throughout a system. Typically, the innovation is first adopted by a relatively small group in the system who are opinion leaders. These early adopters came to know of and accept the innovation as a result of their access to information channels and sometimes access to the originator of the innovation. These opinion leaders in turn exercise their influence over other members of the system, and in combination with the influence of channels of mass communication, the innovation is diffused throughout the system. While the mass media is effective in creating knowledge of the innovation, the opinion leader serves the critical function of persuading the other members

of the innovation's value.

For the most part the staff of the Center for Research on Learning and Teaching limits its attention to those faculty members who seek its service. As a result the direct influence of the Center is limited. Because of the intensive commitment of resources to a relatively few faculty members, the direct impact of the Faculty Fellowship project was limited to an even greater extent. The project staff sought to compensate for this diminished impact by taking advantage of, and augmenting the natural dissemination process in order to diffuse the use of instructional technologies throughout a broader faculty audience.

In their book Rogers and Shoemaker (1971) describe the characteristics of early adopters, those people in the system who are among the first to adopt the innovations and spread it to others. These people tend to be more educated, of higher social status, upwardly mobile, less dogmatic, opinion leaders, and cosmopolites. Of course, these distinctions were based on a general, heterogenious popular. And whereas college professors as a group could be characterised by many of these traits, relative distinctions can be made.

Rogers and Shoemaker (1971) list three ways researchers have identified opinion leaders: 1) sociometric techniques, 2) informants' ratings, 3) self-designating techniques. Chairmen nominations, and faculty selection committees were used as a way of identifying opinion leadership among fellow applicants.

The project staff attempted to apply these criteria when selecting faculty fellows, so that those selected would not only be more likely to adopt innovations themselves, but would in turn influence others. It must be emphasized that the intent was not to train the fellows as change agents, but rather was to take advantage of what was assumed to be a natural and ongoing

process.

The selection of the 1974-75 faculty fellows was preceded by an announcement from the Office of the Vice-President for Academic Affairs to deans, directors, and department heads describing the program and asking interested units to select a nominee for consideration. The unit heads were asked to apply the following criteria when making their nominations: the nominee should be able to be released from departmental duties for one-third time, should display a high quality in previous and proposed instructional improvement activities, and should be able to make a sustained contribution to the unit.

Nineteen applications were submitted. The final selection of six fellows was made by a committee of four senior faculty. In the charge to the committee the members were asked to review the nominees' applications using these criteria:

- the potential of the Fellow to have an increased impact on the learning of his/her student as a result of participation in the Fellowship.
- the potential of the Fellow to have an impact on the use of instructional innovations by colleagues in his/her unit.
- the potential of the Fellow to have an impact on the use of instructional innovations by colleagues in other units.
- to the extent possible using the above criteria, the Fellowship should broadly represent the various academic areas within the University (i.e., social sciences, physical sciences, professions, and humanities and the arts).

The six fellows listed in Table 1 were chosen by the committee.

The four fellows chosen for 1975-76 were selected by a slightly different process which applied the same criteria. A two-step process was used so that finalists could be interviewed to obtain more information for the final selection same directions were given to the selection committee, with an added consideration for the applicant's commitment to instructional improvement generally rather than an investment in one particular project or innovation. The four fellows listed in Table 1 were selected.

Evaluation

When asked what impact their involvement in the fellowship had on their department the fellows' answers ranged from one who felt his "colleagues are less likely to enter into discussions with [him] because they are a little intimidated"; to another who reported that "the department committee for evaluation of instruction requested general materials on teaching techniques. I was able to give them the Fall seminar overview papers [handouts], which turned out to be quite popular in the department."

The effectiveness of the faculty fellows as disseminators was documented more objectively through the use of peer contact logs. Periodically the fellows were asked to report the names of the people with whom they had discussed matters of teaching. At the end of the year the contacts were tabulated. Table 12 indicates that 175 faculty were contacted a total of 338 times by the ten faculty fellows. This group came from 36 different units in the University.

It should be noted that the 1975-76 fellows had a lower contact rate than the 1974-75 fellows. This may be due to the fact that the 1975-76 fellows received a larger percent of released time, and therefore may have spent less time in their departments interacting with colleagues.

Table 12

Peer Contacts About Teaching by Fellows

Fellow	Number of People Contacted	Total Number of Contacts
Dr. A	22	61
Dr. B	46	109
Dr. C	32	61
Dr. D	11	11
Dr. E	18	30
Dr. F	19	26
Dr. G	18	25
Dr. H	1	1
Dr. I	2	4
Dr. J	6	10
Total	175	338

The faculty contacted by the fellows were subsequently sent follow-up questionnaires regarding the nature and function of their conversations with the fellows. Of the 125 faculty who responded 119 recalled the conversations reported by the fellows. As shown in Table 13 the topics of the conversations ranged from instructional development in general to the use of specific techniques.

The faculty also responded to a checklist of functions that the conversations served. Table 14 shows that the faculty indicated that they were more influenced by the conversations than were the fellows. The largest function served by the conversations was in influencing the formation of attitudes concerning the topic discussed. Relatively few adoption decisions were made as a result of the conversation.

Moreover when the contacted faculty were asked what, if anything, happened because of the fellowship that wouldn't have happened anyway, the respondents tended to refer to the fellows' projects or their own awareness of new techniques. None referred to the adoption of a new technique by themselves or others.

These findings are reinforced by two other sources of data. Data from the faculty survey were used to compare the increase in the number of adoptions of innovations by those faculty contacted by the fellows who happened to be in the sample and all other faculty. Table 15 indicates no significant changes in the use of innovations during the period of the fellowship program. These data also indicated no significant increases in the use of innovations in the departments from which the fellows came and all other departments.

The second source of data is the faculty fellows' department chairmen. Upon completion of the fellowship, the fellows' chairmen were asked about

Table 13

Number of Contacts by Topic

Instructional development	44
Curriculum development	30
Faculty development	2
Evaluation, grading, testing	11
Video	33
Gaming, simulation	11
Computer assisted instruction	13
Funding	4
Audiovisual	7
Students	8
Lecture	4
Workshops, labs	9
Team teaching	5
CRLT, FF General	6
General, non-specific	10
Other	9
NA	36

More than one topic could have been discussed during a contact.

Table 14

Function of Peer Contacts*

	N	%
R became aware of the technique	66	32.7
R was formed favorable/unfavorable attitude	62	30.7
R decided to use technique	34	16.8
R was reinforced in an earlier decision	34	16.8
R decided to stop using technique	6	3.0
Total	202	100.0
Fellow became aware of technique	26	22.4
Fellow formed favorable/unfavorable attitude	27	23.3
Fellow decided to use technique	36	31.0
Fellow reinforced earlier decision	26	22.4
Fellow decided to stop using technique	1	.9
Total	116	100.0

*The question asked was:
Please indicate the function of your discussion(s). Check as many as are appropriate. As a result of the discussion:

Table 15

Number of Innovations Used in Peer Contacts, Faculty in the Fellows' Departments and Others*

	1974		1976		
	N	$\bar{X}$	N	$\bar{X}$**	P
Peer contacts	46	7.96	17	8.18	N.S.
Others	374	6.74	151	6.54	N.S.
Faculty in fellows' department	109	7.42	32	7.02	N.S.
Others	183	6.56	79	6.57	N.S.

* R's responded to a checklist of 16 instructional techniques (see Appendix 2).

** Means adjusted using covariance to account for attrition.

their knowledge of the fellows' activities and their impact on the department. All but one of the ten chairmen were familiar with the fellows' activities. However there was little indication that the fellows had an impact on their departments -- at least by the end of the fellowship.

Conclusions and Recommendations

There is substantial support for the fact that the fellows did contact other faculty and discuss instructional matters. These conversations served to make colleagues aware of new techniques and helped them to form their attitudes. However, few adoptions resulted from these contacts. With such a minimal impact on the actual adoptions it is unclear that a faculty development program can be justified solely in terms of the resulting dissemination of innovations.

It is conceivable that the amount of time that passed between the contact and the follow-up questionnaire (eight months at most) was insufficient to reflect the time needed to move from attitude formation to adoption, and that a longer time period would have resulted in measuring more impact. However, it is equally conceivable that the adoption of instructional techniques by college faculty is a highly personal decision and not easily susceptible to the influence of others.

The number of faculty contacted by the faculty fellows lends support to this recommendation:

> The selection of a small number of faculty based on their potential to influence colleagues will result in other faculty becoming aware of and forming opinions about instructional innovations.

Chapter 5

Rewards for Teaching

> The proposed project will increase the recognition of teaching as a rewardable activity among participating departments.

There are those who believe that changing the reward structure in higher education is the key to instructional improvement; that a change in the criteria for promotion would reorient faculty thinking overnight. For example, Dwight Allen in his address to the International Conference on Improving University Teaching stated:

> ...I suggest that college and University administrators decree that any teachers who come out in the top one percent [in teaching] will be promoted. And that's the only criterion needed. They will be immediately promoted -- without regard to time in rank or anything else... At the other end, the bottom one per cent will immediately come under intensive review for their personnel status (1975, p. 302).

Although this radical and untested proposition may work, it holds some difficulties of its own. Educational systems are notoriously resistant to change. As C.P. Snow (1961) has observed:

> I used to think that it would be about as hard to change, say, the Oxford and Cambridge scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic (p. 186).

Changing the entrenched reward structure so as to encourage faculty innovation would probably be more difficult than working with faculty directly.

The intentions of the project with regard to this objective were clearly more modest than those claimed by Allen. Since CRLT is primarily a service

agency rather than an administrative one, it has no control over the traditional reward structure of promotion and tenure. A feasible (albeit partial) approach to the reward problem consisted of facilitating traditional rewards for faculty fellows and providing them with minor rewards over which the center had control. It was hoped that this would in turn influence the fellows value of teaching and that of their departments.

The fellowship itself was meant to be a reward to those faculty receiving it. The names of recipients appeared in the faculty newsletter. Fellows also received publicity as the fellowship progressed, with a feature article on the fellows and their work also appearing in the newsletter. Several fellows were also supported in their applications of outstanding teaching awards.

Support was provided to the fellows in gaining national attention for their work. Dr. D received travel assistance to his national professional conference to report on and present his video tapes. Dr. F. received travel support to report on his course improvements at the National Conference on Personalized Instruction.

Evaluation

The fellows' attitudes toward the fellowship as a source of reward ranged from those who said, "The tapes [that he made] were helpful as a publication," and "The fellowship looks good on a vita," to one who felt, "Assistant professors [in his department] shouldn't be given fellowships." The later fellow was refused tenure during the fellowship period.

When asked to assess the impact of the fellowship on the fellows' careers, their chairmen differed in response. One said, "It was the best

thing he could have done. He didn't know how to teach well." Another, who generally endorsed the activity was cautious with respect to careers, "It does hurt to some degree; publishing is always better." And one chairman said, "It would have been better [for the fellow] to be in the department or the laboratory." In general, the chairmen of tenured fellows were more positive than non-tenured fellows."

Attitudes toward teaching were also obtained from the faculty fellows at the beginning and at the end of their involvement in the fellowship. For comparison, attitudes were also obtained from Instructional Development Fund recipients and a sample of other faculty. The respondents were asked to distribute 100 points across the three criteria commonly used in promotion and tenure (research, teaching and service) as they were emphasized by their departments. They were also asked to distribute the 100 points in a way that they would like the department to emphasize these criteria.

Table 16 compares the faculty fellows with the IDF recipients in pre- and post-test measures of perceived and preferred weight given to these criteria. As it can be seen both groups at both times preferred that more weight be given to teaching than they perceived their departments gave. What is particularly noteworthy, however, is that while the IDF recipients' preferred weight for teaching went up, the faculty fellows preference went down. This was paralleled by their perception of the weight that their departments gave to teaching, which went down in favor of research.

Table 17 shows that the departments to which the fellows belonged gave no different emphasis to the value for teaching than other departments in the University. What then may account for this drop in perceived and preferred weight for teaching among faculty fellows?

Table 16

Percent Perceived and Preferred Weight Given to Research, Teaching, and Service*

Percent Perceived Weight Given by Department

	Research		Teaching		Service	
	1974 $\bar{X}$	1976 $\bar{X}$	1974 $\bar{X}$	1976 $\bar{X}$	1974 $\bar{X}$	1976 $\bar{X}$
IDF Recipients	46.2	50.1	32.5	31.4	18.5	12.4
Fellows	36.8	58.8**	39.4	29.1	23.8	11.4**

Percent Preferred Weight Given by Department

	Research		Teaching		Service	
	1974 $\bar{X}$	1976 $\bar{X}$	1974 $\bar{X}$	1976 $\bar{X}$	1974 $\bar{X}$	1976 $\bar{X}$
IDF Recipients	35.6	38.2	42.6	43.8	21.1	14.2**
Fellows	31.8	35.5	47.5	41.3	20.6	23.0

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*The question asked was:

Now I would like to know your opinion of the relative weight given to good teaching when a faculty member in your unit is considered for promotion or raise. Let's take the three criteria normally used in making such decisions: research, teaching, and service. Given 100 points, please distribute them over these three criteria in the way you think your unit emphasizes them when making promotion and salary decisions. Give the most important criterion the most points.

research_____ teaching_____ service_____

If you disagree with the way your unit weighs these criteria, please redistribute the 100 points in the way you think these criteria <u>should</u> be emphasized.

research_____ teaching_____ service_____

**Change from 1974 to 1976 significant beyond .05 level.

Table 17

Percent Perceived Weight Given to Research, Teaching, and Service by Faculty in the Fellows' Departments and Others in 1976

	Research	Teaching	Service
	$\bar{X}$*	$\bar{X}$*	$\bar{X}$*
Faculty in Fellows' departments	47.0	33.0	18.8
Others	48.6	32.7	17.2

*Means adjusted for attrition from 1974 to 1976.

Table 18

Amount of Satisfaction Derived from Research, Teaching, and Service*

	Research	Teaching	Service
	$\bar{X}$	$\bar{X}$**	$\bar{X}$***
IDF Recipients	41.1	42.2	15.8
Faculty Fellows	35.9	50.3	13.7

* The question asked was:
Now we would like you to distribute the 100 points in a way that reflects the personal satisfaction and gratification that you derive from each of these activities.

research_____ teaching_____ service_____

** t test significant beyond .01 level.

*** t test significant beyond .05 level.

It seems that one possible explanation was an internalization of the value for teaching among faculty fellows. When asked to distribute 100 points among research, teaching, and service as they reflected personal satisfaction derived from these activities, the faculty fellows and IDF recipients responded as shown in Table 18. While pre-measures were not obtained for this question, and therefore statements with regard to change cannot be made, the fellows derived significantly more satisfaction from teaching than IDF recipients. It may have been an awareness of this difference between the fellows and their colleagues which caused them to depricate their perception of the departments value of teaching when making promotion and tenure decisions.

The drop in perceived weight for teaching was also affected by the perceived increased in the weight given to research (which rose significantly). During their fellowship several fellows received pressure to publish. In fact two of the nine fellows were released from the University within a year after their fellowship, because of a lack of publications. Ironically, one of these fellows had just received an Outstanding Service Award for teaching.

Explaining the fellows' apparent drop in the preferred weight for teaching is more problematic. All that can be said is that the change was not significant, and when asked if they were aware of a change in their attitudes during the previous year, none of the fellows responded positively. As one fellow put it, "My views on teaching have been developing over the past twenty years; you can't expect a big change." This apparent change, therefore, may have only been chance.

Conclusions

Regardless of the explanation it is clear that the project failed in its attempt to increase the recognition of teaching as a rewardable activity among participating departments. This problem remains one of the most difficult to solve in the attempt to improve instruction in higher education.

Chapter 6

Problems and Conclusions

Aside from the principal objectives of the project other concerns and problems arose during the two years. As the project progressed patterns emerged with regard to the status of the faculty fellows, the diversity of purposes within the project, and the use of released time by the fellows. And although these do not relate directly to the project goals they are worthy of consideration.

Tenure and the Selection of Fellows

During the first year of the project the tenure status of the fellowship applicants was not used as a criterion for selection. Instead the department chairmen were asked to nominate people who would be able to make a "sustained contribution" to the department. Using this criterion it was hoped that both senior faculty and promising junior faculty could be considered, both being able to disseminate information on teaching to their colleagues for a prolonged period.

Of the six faculty fellows selected the first year, four were without tenure. Within two years after the end of their fellowship all four had left the university. Two were released for lack of research publications and the other two left for personal reasons.

It became a policy the second year to limit the fellowship to tenured faculty. There were two reasons for this. First, tenured faculty have more dissemination potential. They are more likely to be around and in a better position to influence their colleagues. In contrast to the non-tenured fellows, both tenured fellows from the first year are now part-time administrators. One is an associate dean, the other an associate director for instruction. Although there is no indication that their involvement in the fellowship contributed to their being drafted into administration, any influence the fellowship experience had on them can now be more easily disseminated because of their positions.

On the other hand working with non-tenured faculty is risky. Because of lower status they are less likely to have influence with their colleagues, and it is also less likely they will be around long enough to make an impact. Furthermore involvement in an intensive activity such as the fellowship may in itself increase the risk for the non-tenured fellow. Several of the department chairmen when asked about the impact of the fellowship on the careers of their non-tenured faculty said the fellows' time would have been better spent publishing. This is despite the fact that department chairman's support was needed for nomination to the fellowship originally. Restriction of membership to tenured faculty reduces this problem.

Goals and Cross-Purposes

With such an intense program as the fellowship, a diversity of goals was bound to create difficulties. Several sources of tension arose during the fellowship around a difference in goals.

Individual goals vs. group goals. Each fellow came into the project with goals and plans very different from the other members of the group. A

substantial amount of staff time was spent working on individual projects with the fellows. However, there was also a considerable amount of time spent working with the fellows in group meetings. This created a tension in that some fellows seemed to resent taking time off their own project in order to get to know and communicate with other fellows. On the other hand several fellows expressed the opinion that the support they received for their innovative projects from other fellows was one of the greatest benefits of the fellowship, for such support was not readily available from faculty in their departments.

Need vs. awareness. The seminar series conducted during the fellowship was meant to expose the fellows to new techniques in instruction. Several fellows expressed the desire on occasion to attend only those seminars which related to the fellows' planned projects. However, upon evaluation of the seminars the fellows cited becoming aware of new techniques as one of the primary functions of the meetings. In fact several unplanned adoptions occurred as a result of seminar meetings.

Project goals vs. personal goals. For the most part project goals and the personal goals of the fellows coincided. The fellows became fellows because they wanted to adopt new techniques to improve their instruction. However, the greatest tension arose when personal goals and project goals were at cross-purposes. This tended to be the case most often with regard to data collection. Information necessary to the documentation of project effectiveness was seen as a burden and an imposition by the fellows, who were of course primarily concerned with designing and implementing their projects.

Avoiding such differences in goals is probably impossible and may be even undesirable. The necessary response to such tensions is for project

staff to be open and flexible. Many of the problems that existed between project and personal goals occurred the first year of the project. Because of the short time between the award of the FIPSE Grant and the beginning of the school year fellowship applicants were inadequately informed of the project goals and procedures. Applicants for the second year were interviewed prior to selection and informed of the objectives and procedures of the project. This greatly reduced this source of tension.

Flexibility was used with regard to other sources of tension. During both years of the fellowship expressed concern resulted in substantial fellow input as to the agenda of the seminars, thereby increasing the responsiveness of group functions to individual needs.

Released Time

Beyond doubt released time was the most expensive component of the fellowship project, yet it would be difficult to envision a "fellowship" without it. Of the nine fellows who received released time, one rated it as "very useful," and seven said they couldn't have accomplished their projects without it.

There was one case last year where a fellow did not have released time. This did not interfere with regular attendance at functions nor with his project productivity. It is likely that this is a unique case, for it is hard to imagine a number of faculty contributing a block of their time in this way.

It is more likely that the necessity for released time depends on the goals of the program. If the goal is to conduct a major course revision, it is likely that released time is needed. If the goal is to implement a single

innovation or impart and disseminate information, released time may not be necessary.

Three different arrangements were used for released time for those fellows who received it. Five fellows the first year received "one-third" released time for the entire academic year. This usually amounted to release from one course. In the second year the fellows did not receive released time until the winter term. Two of the fellows received full release time for the term; the other two taught only their target course.

Of these arrangements the project staff felt that the later arrangement worked the best. One-third released time did not seem to free the fellows from enough course and committee work to avoid having these remaining responsibilities reclaim the time. Those fellows receiving released time in the winter term spent the fall preparing for their winter work. This planning was done in addition to a regular course load. The advanced preparation allowed the fellows to use their released time effectively. This was particularly so when the two fellows who were also teaching their target courses for it kept their work particularly focused.

Conclusions

In summation, it can be said with a fair degree of confidence that the faculty fellowship project was a partial success. The faculty fellows did indeed adopt a number of innovations for their target courses. They increased their use of innovations more than the general faculty and more than Instructional Development Fund recipients.

Students did learn as a result of these adoptions. Several experiments supported the effectiveness of materials developed during the project.

Student rating also provided some support for the contention that instruction improved in these courses. Student ratings on those items which related to the goals of the fellows' projects tended to be rated high by students.

The fellows did act as dissemination agents. They contacted a large number of their colleagues to discuss a large variety of issues in teaching. These contacts, however, served principally to inform and influence peers. Few adoptions of innovations could be traced to work of the fellows.

Finally, and most discouragingly, the project failed in its attempt to increase the recognition of teaching as a rewardable activity. Although the fellows derived more satisfaction from teaching than other faculty, their perception of the weight given to good teaching by their departments actually dropped during the two years of the fellowship. And several department chairmen indicated that their faculty participating in the project may have spent their time better in conducting publishable research.

Review of Recommendations

Based on the above conclusions the following recommendations are made:

1. Media should be matched to the characteristics of the instructional situation. Attributes of the course content, the students, the teacher, and the classroom environment should all be considered when making instructional decisions.
2. A comprehensive collection of information on a course aids in decision making. Data from such sources as discussions with instructors and students, classroom observations, questionnaires, and records should be thoughtfully summarized and presented to the instructor in case study form. Subsequent consultation on the implications for instruction should take place between the instructor and an instructional developer.

3. When student ratings are used to evaluate instructional changes, ratings of the specific changes should be collected in addition to the more general items. General items, much like student IQ, may measure the more enduring qualities of the teacher and may be less sensitive to change. Specific questions can be used to get a more reliable measure of student reaction to change.
4. Seminars can be effectively used to increase the awareness of and influence the attitude toward instructional innovations. Such seminars should present such information about the technique as, what it is, what its advantages and disadvantages are, what its appropriate uses are, and how it is used. The seminars should also have an experiencial component to them. A seminar on games should not be limited to merely talking about them -- one should be played.
5. Concrete support in terms of released time, funds for production, and technical assistance is probably essential for a significant increase in the use of technology. The lack of these resources is frequently cited as the reason why changes in instruction do not occur. Ready access to them makes the adoption of an innovation a feasible alternative to the way things have always been done. Instructional support takes the teacher from good intensions to implementation.
6. The selection of a small number of faculty based on their potential to influence colleagues will result in other faculty becoming aware of and forming opinions about instructional innovations.

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Appendix 1

COURSE: PSYC. 202, INTRODUCTION TO SOCIAL PSYCHOLOGY

INSTRUCTOR: DR. J

TEACHING ASSISTANT: MR. K

TOTAL ENROLLMENT: 54

DATE: Fall, 1975

CONTENT AND OBJECTIVES

Introduction to Social Psychology (Psyc. 202) is described by the instructor as:

> Course at an introductory level that deals with a series of topics at the interface between Psychology and Sociology. The aim is to make you aware of the kinds of questions and issues that social psychologists study, and especially to expose you to important conceptual frameworks that have been used to organize and investigate each of the topics covered. In the process we hope to expose you to some facts but we are generally less concerned with these than with getting you to learn how to think about and formulate good, answerable questions about social behavior.

Specifically, the course objectives are intended to enable the student to:

1. Demonstrate an awareness of the social-psychological issues embedded in everyday life.
2. State theories and concepts bearing on the social-psychological topics covered in the course.
3. Compare and evaluate such theories and concepts and in so doing demonstrate the problematic quality of social-psychological explanations.
4. Bring to bear appropriate concepts for the purpose of understanding and explaining the social-psychological content of experience.

On an instrument administered half-way through the course, students responded to the question, "What do you think are the major objectives of this course?" About half the students chose objective no. 4, application, and half chose understanding and evaluation of theory, objectives nos. 2 & 3.

The course might have been enhanced had all students known what all the objectives were.

The instruments used for evaluating students -- pre-post test, midterm, and final -- broadly reflect the course's stated objectives. The pre-post test used in the Dr. J section (none was used in the two Mr. K sections) focused heavily on interpreting experience. The midterm is more concerned with social-psychological theories and concepts while the final includes questions that probe the students' understanding of theory and concepts, the application and comparison of these as well as some questions requiring the interpretation of life situations.

The topics and content used for teaching the skills and aptitudes described in objectives 1-4 are represented by the course outline:

Course Outline

1. Introduction: People and Their Social Organization (2 weeks)

2. Being and Becoming a Socialized Person (5 weeks)

    2.1 Perceiving the Social Environment: Meaning and Cause
    2.2 Perceiving Oneself: Identity and Role
    2.3 Acquiring Moral Values and Social Motives

3. Social Encounters (4 weeks)

    3.1 Small groups and Face-to-face Interaction
    3.2 Social Influence and Attitude Change

4. People and Institutions (3 weeks)

    4.1 Deviance and Social Control
    4.2 Alienation and Commitment

End of the course response as measured by the Purdue "Instructor and Course Appraisal" reveals that students felt that the course had achieved its

objectives. It had been built on concepts and principles and they had learned to apply them. Students in Mr. K's two sections were notably positive with respect to the latter. The pre-post test used in the Dr. J's section focused on application, and most students in his section showed a significant gain, typically increasing their scores by 25%.

More globally students felt the Psyc. 202 provided an effective range of intellectual challenges, stretched and broadened their views and caused them to reconsider their former attitudes. In comparing the scores from Dr. J's section (Fall, 1975) for all of the above objectives with those from Spring 1975, no appreciable change is apparent.

ENVIRONMENT

Psyc. 202 is an elective course for undergraduates. Most of the students taking the course do so for partial fulfillment of their distribution requirements.

All students in the course met together once a week in 2402 Mason for one hour to hear or see a content presentation: lecture, film, videotape, etc. The room was a medium size lecture hall with long narrow tables and fixed setting for about one-hundred students. It had ample natural lighting and a good view into a quiet courtyard. During the term it was observed that the associations developed in the bi-weekly discussion sections carried into the weekly presentations. Students from the same sections frequently sat together and chatted before and after the presentations.

The center of action in Psyc. 202 was bi-weekly discussion sections. Dr. J's section met in a seminar room, Mason 1408. It was furnished with a large central table, chairs. It had good light and a view. One of Mr. K's sections was held in a LSA classroom equipped with chair-desks which had to be rearranged for face-to-face discussion. Frieze Building,

the site of Mr. K's other section, was compared even to the sensory deprivation typical of most university classrooms, a disaster. An all-white room, without windows, it had one door opening onto a busy and noisy corridor. The door had to be left open in order to prevent acute oxygen deprivation. On a warm fall day the room was at best very uncomfortable.

In a pre-course instrument students were asked to rank their preferences in learning environments (teacher oriented, automated, interactive, student oriented, simulated experiences, real or direct experience).

Students in all sections ranked interactive environments first. That is, one characterized by a seminar setting with students and instructor facing each other, a circular arrangement of chairs, an informal setting. To an almost equal degree the students showed a strong preference for an experience oriented environment with emphasis on field study and experiential learning. Least favored was an environment in which instructional technology played a major part. Environments such as teacher oriented and student oriented were ranked in the middle with simulated experiences.

At the end of the course students in all three sections ranked the learning environments they had experienced in Psyc. 202. Students in all three sections experienced the learning environment as primarily interactive and as being high in simulated experiences. They also indicated considerably less contact with experiential learning and field study than their pre-course preference showed they would have liked.

The instructors were also asked to report on the teaching-learning environment from their point of view. Dr. J saw his section as primarily interactive with some simulated experiences, modified somewhat by a teacher orientation. Dr. J commented positively on the seminar room provided for his section as well as on the film and library facilities available at the university. Mr. K perceived the environments in his two sections in

similar terms, primarily interactive supplemented with simulated experiences, however he saw his sections as somewhat student orientation in contrast to the instructor orientation registered by Dr. J. Student post-course rankings tended to substantiate this variation between instructors. The statement, "This course provided an opportunity to learn from other students," received substantial agreement from students in Mr. K's sections. There was no comparable measure from Dr. J's group.

Despite a number of positive observation and indicators in all three sections of high interaction within class, the students' report of their own activities doesn't indicate that interaction with each other or the instructors carried beyond the classroom.

STUDENTS

The majority of students enrolled in Psyc. 202 were either LSA freshpersons or sophomores with some students from other schools and colleges. Average total SAT scores were in the 1000-1100 range, with verbal SAT scores between 500-550. Average scores on the UM-PRF on virtually all dimensions fell between the 55th and 65th percentiles. Some of Mr. K's students were slightly lower in Affiliation and Cognitive Structure and slightly higher in Achievement. Students in Dr. J's section registered in the high sixties on Dominance and Understanding.

On the measure of general learning styles, GR General Form, all three sections showed the strongest preference for Participatory and Collaborative modes of learning with average scores in the "moderately agree" range, 45-60. No consistency was seen between UM-PRF averages on dimensions such as Achievement, Affiliation and Autonomy and the seemingly corresponding GR learning styles, i.e., Competitive, Collaborative and Dependent-Independent. The lowest average score on the learning style questionnaire was on the Competitive learning style.

The GR Specific Form was used at the end of Psyc. 202 to determine the specific learning styles and behaviors that students had employed in the course. There was no consistent shift in scores between the preferred styles measured at the outset of the course and the styles actually employed as measured at the end, except on the Competitive which dropped even lower in all sections. This result may be related to student feeling registered on another end-of-course instrument where, relative to other statements , "Had the course stimulated their best efforts?" received only weak agreement.

While there was considerable unanimity among students in all groups with respect to preferred learning environments and learning styles, there was less concerning specific methods of instruction. All students preferred clear and specific assignments as well as an instructor who clearly indicated the main points. Both Dr. J and Mr. K were judged satisfactory in this respect. This strong preference for orderliness and clarity in instruction indicates perhaps something other than rampant anal compulsion. It may be that students view clarity and specificity as qualities that significantly enhance their prospect for success and permit them to invest their time and effort with maximum efficiency. It should be noted that based on the "Student Report of Class Activities" only a minority of students showed signs of behaving in as tidy and organized manner as all students had expected of the instructor.

Other specific modes of learning and instruction were clearly preferred only by minorities. For example, unlike the students in Dr. J's section, those in Mr. K's sections chose writing a report or term paper on a topic of their own choosing as a desirable learning activity. Some students showed a clear preference for having to present arguments on both sides of an issue while others registered a strong preference for discussion and yet

others favored being called upon in class. Argumentation, discussion, expression of opinion, while different forms, are all essentially interactive.

As has been already noted, students in Psyc. 202 picked an interactive environment as their learning environment of choice. At the end of the course they said they had experienced the environment in this course as primarily interactive. According to their self-reports, the majority of students in all sections listened attentively, participated in class discussions, and talked with other students about the material either "very often" or "quite a bit." And to the key question on the "Instructor and Course Appraisal" bearing on this issue, "Each student is encouraged to contribute to the class learning," asked in Mr. K's sections, students registered solid agreement. It seems fair to conclude that with respect to interaction, students knew what they wanted, they got it and did it.

Student dislikes for specific materials was not uniform or strong. Except for memorizing which all students disliked and an antipathy for oral reports among a minority, no clear pattern emerged from the data.

Student Performance

Out of 54 students completing Psyc. 202 all but three received grades of A or B. Thus it is difficult to correlate different levels of performance as marked by the end of course grades with content, objectives, instructor, learner, environment characteristics. However, students in Dr. J's section as has been noted were given a pre and post test on application that showed a significant gain for most students. A cursory comparison of the data on all measured dimensions for the three students who registered the largest gains, about twenty points each, with those who showed the smallest or negative gains, eight to minus seven points, revealed no significant difference. The only difference between the two groups appeared on the

"Instructor and Course Appraisal," where the students with the largest gains were more approving of the course and instructor than those with the lowest or negative gains.

In Mr. K's sections where no pre-post test was employed, so the final examination was used as a measure of student performance. Comparing those students with the best final examination scores, ten with scores of 75 or more, with those twelve doing least well, twelve with 65 or less, it was found that the high scorers were appreciably more prone to change and disliked ambiguity and imprecision more than the low scorers, who were higher in affiliation, dominance and wanting to understand. Low scorers also seemed somewhat more collaborative and dependent in their learning styles. High scorers showed a stronger preference for teacher as model than the low scorers who preferred the teacher as organizer of knowledge. However, the high scorers were considerably more favorable to a teacher oriented environment than were the low scorers.

In reporting on course activities and attitudes, the student who did well tried to relate the course materials to their own ideas and life experience rather more than those doing less well. The students who did relatively poorly on the final examination seldom if ever made an appointment to see the instructor nor did they meet with other students interested in the course. The same students reported recommending the course to others more frequently than those who did well on the final.

While a preliminary review of the data reveals some correlations between performance on the final and learner preferences and characteristics, their meaning, if any, is far from clear.

INSTRUCTORS

Dr. J is a thirty-five year old, white male. He received his Ph.D. from the University of Michigan and has taught for eight years. Five of these were at Harvard and for the last three years he has been in the University of Michigan Department of Psychology where he is an Associate Professor. He has published extensively on interaction processes, especially embarrassment and the social-psychological dimensions of foreign policy. He is currently listed as teaching Social Influence and Deviant Behavior as well as Introduction to Social Psychology. He serves on a number of dissertation committees.

Dr. J is very, sometimes painfully, aware of himself as a teacher. In his application for the Faculty Fellow program and frequently thereafter, Dr. J voiced a major concern:

> I am not a good intermediary between the material I have organized and the students I teach. I am frequently quite uptight in class, bored by hearing myself talk yet afraid to change style or to give students more control over class for fear I won't know how to handle it, or that things will get out of control and I won't be doing my job.

In choosing between seven descriptions of teacher types, Dr. J registered what he called a "schizoid" view of himself. On one hand concerned with content, intellectual training and analysis but on the other wishing he could be more of an intellectual and personal growth facilitator for his students.

He prefers using discussion to teach content material but registered deep dissatisfaction with his discussional skills, believing that they produce a heavily teacher-dominated discussion, i.e., a sit-down lecture. He saw himself as hamstrung by a sense of responsibility for content, concepts and theory but wants to promote more interactive learning and personal growth.

On an unscaled questionnaire that listed a wide variety of teacher characteristics he strongly agreed with statements which defined the teacher

in terms of intellectual and analytic training but at the same time chose statements that showed a high concern for student participation and enjoyment. He also strongly agreed with statements that portrayed him as uncomfortable and unsure in the teacher's role. He most strongly disagreed with statements that emphasized the teacher as a preprofessionalizer.

On the UM-PRF Dr. J ranked high in endurance, understanding and cognitive structure. His scores on achievement, affiliation and autonomy form a middle grouping with those for dominance and change being relatively low.

Before Psyc. 202 began, students in Dr. J's section ranked preferred teacher types, Their strongest preference was for an instructor who sees intellectual development as part of the growth of a total personality and one who is a facilitator, i.e., someone who sees him or herself as a resource for students in achieving their own learning goals. By way of contrast the instructor who emphasizes the disparity between teacher and student knowledge and who sees the ideal student as one who moves from relative ignorance to relative knowledge in the field, was the type liked least along with an instructor who conceives of himself as a model for students in their approach to the discipline.

At the end of the course using the same typology students ranked Dr. J highest on those sets of teacher characteristics, personal growth and intellectual facilitation, for which they had registered the highest preference at the outset. He was perceived as emphasizing content somewhat less than their original preferences indicated they wanted.

It is worth noting that while Dr. J thought of himself as projecting primarily a content and intellectual analysis orientation while wishing to have more effect as a facilitator of intellectual and personal growth, it was

in fact in these latter terms that he was perceived by most of the students. By the end of the course, he too had come to see himself as projecting more of the desired characteristics.

Correspondingly, Dr. J was judged by his students as being relatively strong in respecting student questions and comments, relating to individuals and making students feel involved. There was also agreement in his class to the proposition that "A teacher/student partnership in learning was encouraged."

With respect to specific teacher characteristics he was seen by his students as relatively strong in the use of examples and illustrations, and providing many challenging points of view. Relative weaknesses occurred in his ability to explain and simplify difficult material and develop classroom discussion skillfully, the latter being an area about which Dr. J himself has expressed considerable concern. A more general area in which relative weakness appeared was the instructor's ability to stimulate interest and motivation. Dr. J himself, in rating these areas did not see quite the same degree of weakness. Both Dr. J and his students perceived some deficiencies, he more strongly than they, in the ability to recognize a lack of student comprehension, to adjust to individual abilities and interests, to encourage divergent thinking and to induce motivation.

On balance students in Dr. J's section registered only an "undecided" to the proposition, "This instructor is among the best teachers I have known."

In comparing these results obtained in the fall of 1975 with those from Psyc. 202 as taught by Dr. J in the summer of 1975, there was a positive shift in the degree to which students perceived the instructor as making them feel involved and engaged in a learning partnership and improvement with respect to providing challenging viewpoints. But his ability to simplify and explain

seems to have declined in the more recent version of the course. Relative weakness persisted in the area of classroom discussion, stimulation and motivation.

The teaching assistant in Psyc. 202 was Mr. K, a young, white male graduate student in the Department of Psychology. He exhibits a strong interest in teaching. He is currently completing his course work and beginning his dissertation. Mr. K is very sensitive to his environment and specifically to the thoughts, feelings and needs of others. He has described himself as a teacher in the following terms:

> Inconsistent, perhaps, in that I don't know how my day-to-day performance can be related to my "ideals" about teaching and learning. I try to lessen distance between myself and my students, yet I find myself using this distance to get myself out of jams occasionally. Try to be experienced oriented and try to hide the structuring of learning that I do. Do not conceive of myself as an authority on subject matter, yet am aware that often this is expected of me. Flexible in a traditional sense. Students would like more of a facilitator and I really don't achieve this. They also want me to make more real experiences available to them. I'm not sure this is possible. I think my personal growth orientation coincides with this, but I often provoke anxiety in achievers because, I try to publicly discount my role as certifier.

Accordingly he initially ranked those teacher types which best described him in the following order: facilitator of personal growth and facilitator of intellectual development. He also registered some concern for helping students understand the requirements of further professional education, perhaps a natural concern for a graduate student.

On the unscaled instrument listing a variety of instructor characteristics he agreed with statements that showed a very high degree of concern for the student as a person and the role of the instructor as one who encourages free thought, expression and joy in learning. He disagreed with those statements that defined the teacher as an expert dispenser of disciplinary information and students as docile proto-professionals.

On the UM-PRF he scored in the higher percentiles on endurance, dominance, affiliation and understanding. His scores for change and affiliation were in the second quartile while his need for cognitive structure was very low.

Like those in Dr. J's section, the students in Mr. K's sections were asked at the outset of the course to rank instructor types according to preference. They chose instructor types who facilitate intellectual and personal growth. A number of students rank instructors who deal with the requirements of further professional education third. This corresponded to Mr. K's self-ranking. Least liked in Mr. K's sections were instructors who emphasized the disparity between teacher and student with respect to knowledge and an instructor who presented him or herself as a model for the students approach to the discipline. All in all, there was a high correspondence between Mr. K's description of himself and the student ranking of preferred instructor types.

Using the same typology at the end of the course, students in both Mr. K's sections saw him as very much representing their initial preferences and his own initial self-assessment. Students also recognized, as did Mr. K, some emphasis on intellectual and analytic training in his teaching style.

On virtually all the specific instructor characteristics and behaviors listed on the "Instructor and Course Appraisal" Mr. K's ratings fell in the "agree" range (2+ or .2). Within this range some of his highest ratings were for helping students apply theory, encouraging students to contribute in class, and class rapport. His weakest areas, those falling around 2.5, were suggesting ways for a student to improve and motivation. Students rated Mr. K as stronger on virtually all instructor behaviors and characteristics including even the weaker areas than Mr. K rated himself. Students

agreed with the general proposition, "I would enjoy taking another course from this instructor," and a large majority agreed with rating the instructor among the best they have known.

Finally, the unusually high degree of cooperation and peership that prevailed between Dr. J and his teaching assistant deserves special recognition. Though no data exists, it is fair to assume that it contributed significantly to the course and student learning.

METHODS AND MEDIA

The weekly plenary meeting of the entire class employed a variety of media: films, videotape and lectures. These presentations were designed to provide students with materials and experiences that could not be obtained either in the assigned readings or in the discussion sections. Like the readings they were intended to provide material for the bi-weekly discussion sections. The films shown included, "The Year of the Commune," "Growing Up Female," and "Conformity and Independence." There were lectures on Brave New World and the theory of embarrassment and person perception. A videotape of Lawrence Kohlberg speaking on moral development and a slide presentation on prison life were also used. A variety of once-a-week presentations of this kind in contrast to the conventional two or three lectures a week represented Dr. J's conviction that students don't learn much by being lectured at as well as his own discomfort with the lecturer's role.

As measured on a mid-term instrument students found the weekly presentations, as compared with their discussion sections, to be the weaker element. This corresponds to their learning environment preferences for the interactive rather than presentational modes. Among the films, "Growing Up Female" was best liked as indeed were the accompanying discussions of sex roles and

sex types. Among the lectures, Dr. J's on embarrassment was well received. The videotape of Lawrence Kohlberg's low resolution, talking-face was the least liked of the presentations. The end-of-course appraisal used in Dr. J's section asked students if the films had contributed to their learning, they agreed they had.

Assigned readings comprised a substantial part of the methods and media used in Psyc. 202. Both Mr. K and Dr. J expressed concern that the extensive reading assignments were insufficiently utilized in the discussion sections and that they had failed to tie things together. Some students in all discussion sections also felt that the readings were too numerous and underused. On the end of course appraisal, the average response to questions used in Mr. K's section, "the readings were well integrated into the course" received a low 2.68. Similarly students did not respond well to the proposition that course assignments were interesting and stimulating. However, students in Dr. J's section responding to questions bearing on the worth, interest and stimulation of the same reading assignments gave them appreciably higher ratings. Student reports of their own activity indicates that, by and large, they did readings and took notes on them.

A number of simulations and role plays were used in the course and they appeared to the students to be a major part of the course. In the post-course ranking of the teaching environment all sections ranked simulated experience as second after interactive as defining their environment. The students in Dr. J's section responded with solid agreement when asked to rate worth of the games and simulations used in the course. Mr. K's sections were not given a similar question.

Another learning method used in the course was student journals. These records of personal response to the materials replaced the traditional

paper. Students were required to post ten entrees in their journal during the term. With notably few exceptions, students completed their journals appropriately.

EVALUATION

As has already been noted in this report three standard instruments were employed to evaluate student learning in Psyc. 202. A pre-post test was used in Dr. J's section. Midterm and final essay examinations were used in all sections. For these, students were given study questions or sample examinations in advance of the actual testing. The final appeared to be especially well constructed reflecting the full range of course objectives and content.

Insofar as the midterm and final were intended to discriminate between students who were doing well and those doing less well, they seem adequate. A full range of scores was obtained in both instances.

There is only very limited and indirect evidence of the students' opinion concerning the evaluation techniques used in Psyc. 202. Students in all sections felt that they knew what was expected of them. In Mr. K's sections students agreed, not strongly, that the examinations had instructional value. How the predominantly essay examination technique was received by students who had indicated a slight preference for objective examinations is not clear.

Finally, with respect to student evaluation of the instructor, in Mr. K's sections where the question was asked students agreed that the instructor respected their constructive criticism.

GENERAL

Both the Report of Course Activities and Attitudes and Instructor and Course Appraisal register data on certain larger issues than have been covered in the preceding sections of this report. It is appropriate to examine several of them by way of conclusion.

On a number of key indicators the results are generally quite positive for all sections. A strong majority of all students clearly perceived the relationship of this course to their education and thought they would like more courses in sociology. While the average answer to the strong proposition -- Overall this course is among the best I have ever taken -- "undecided" a solid majority felt that they had enjoyed working in the course.

Appendix 2

Checklist of Instructional Techniques

small group discussion

Keller Plan

diagnostic testing to determine course emphasis

contract grading

use student ratings to improve course

instructional video (including video tape)

sound films or film loops

slides or film strips

audio tapes

overhead projector

visuals or graphics (maps, charts, etc.)

computer-aided instruction

programmed instruction or other printed self-instructional materials

simulations

instructional games

role playing

These were included in the list but not counted as innovations:

lecture

textbooks or readings